



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,441	09/19/2004	David Famolari	004900.00025	5440
22907 7590 09/02/2008 BANNER & WITCOFF, LTD. 1100 13th STREET, N.W. SUITE 1200 WASHINGTON, DC 20005-4051				
EXAMINER				
SAFAIPOUR, BOBBAK				
ART UNIT		PAPER NUMBER		
2618				
MAIL DATE		DELIVERY MODE		
09/02/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/711,441

Applicant(s)

FAMOLARI, DAVID

Examiner

BOBBAK SAFAIPOUR

Art Unit

2618

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-20 and 22-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-20, 22-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This Action is in response to Applicant's response filed on 5/20/2008. Claims 9 and 21 have been cancelled. **Claims 1-8, 10-20, and 22-26** are still pending in the present application. **Claims 1-3, 8, 13-15, and 20** are allowed. **This action is made FINAL.**

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

In the present application, Applicant argues that Velazquez fails to teach features related to updating an entry for a station responsive to every transmission by the station.

Examiner respectfully disagrees. Velazquez discloses the base station transmits its position to the mobile unit via the Paging Channel. If the mobile unit is employing a directive antenna array 35', it uses the base station position and its current position and heading information to form a beam pattern toward the base station. The mobile tunes to the Traffic Channel and starts sending a Traffic Channel preamble and the current mobile location information to the base station via a Reverse Traffic Channel. Every two seconds, the GPS location is updated and sent to the base station via the Reverse Traffic Channel. If the mobile unit is employing a directive antenna array 35', every two seconds it uses the current heading information and compares its updated position information to the stored location of the current base station to update the beam pattern toward the base station (read as updating an entry for a station responsive to every transmission by the station) (paragraphs 57-58). Applicant argues that Velazquez imposes a time threshold requirement for purposes of updating a beam pattern. As Velazquez discloses, every two seconds, the GPS location is updated and sent to the base station. The Examiner respectfully argues that if the GPS location is updated every 2 seconds,

then updating the entry for the station is responsive to every transmission by the station, as claimed in the present application.

It has been shown that updating an entry for a station responsive to every transmission by the station is taught in Velasquez. If the Applicant intends to differentiate between the updating of the present application and the GPS location being updated every two seconds of the Velazquez reference, then such differences should be made explicit in the claims. As a result, the argued features are written such that they read upon the cited references; therefore, the previous rejection still applies.

Furthermore, Applicant argues, with respect to claims 25 and 26, that the "determining" the angle of arrival of said packets, as claimed, is conducted at the terminal of Park. Applicant argues that one skilled in the art would not have had an apparent reason to combine Park and Velazquez in the manner suggested by the previous Office Actions because the duplication of resources (in both an access point and a terminal) would represent an unnecessary waste of computing resources.

The Examiner respectfully disagrees and notes that the Applicant's assumption that an unnecessary waste of computing resources is irrelevant to the claimed subject matter. Velazquez discloses the beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal, and generates a set of complex antenna weights to apply to each antenna output for each mobile unit such that the combined signal represents a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive

signals. The complex antenna weights are calculated to simply steer the antenna beam.
(paragraphs 58-67)

It has been shown that determining the angle of arrival of said packets is taught in Velasquez. If the Applicant intends to differentiate between the determination of the angle of arrival of said packets and determining the AOA of the Velazquez reference, then such differences should be made explicit in the claims. As a result, the argued features are written such that they read upon the cited references; therefore, the previous rejection still applies.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4-7 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bahl (United States Patent Application Publication #2002/0095486 A1)** in view of **Velazquez et al (US 2001/0003443 A1; hereinafter Velazquez)**.

Consider **claim 4**, Bahl discloses a method for updating a table in a wireless access point comprising the steps of determining when an entry for a station had been last updated (figure 2; paragraphs 30-38 and 45); and determining if a time for said last update for said station is greater than a threshold (figure 2; paragraphs 30-38 and 45); listening for a transmission by said station (figure 2; paragraphs 30-38 and 45).

Bahl fails to specifically disclose and updating said entry for said station responsive to every transmission by said station.

In related art, Velazquez discloses updating said entry for said station responsive to every transmission by said station (paragraphs 58-69; The base station receives the updated mobile unit location information and updates it beam pattern towards the mobile unit.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Bahl to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 16**, Bahl discloses a system for updating a table in a wireless access point comprising means for determining when an entry for a station had been last updated (figure 2; paragraphs 30-38 and 45); means for determining if a time for said last update for said station is

greater than a threshold (figure 2; paragraphs 30-38 and 45); and means for receiving a transmission by said station (figure 2; paragraphs 30-38 and 45).

Bahl fails to specifically disclose and updating said entry for said station responsive to every transmission by said station.

In related art, Velazquez discloses updating said entry for said station responsive to every transmission by said station (paragraphs 58-69; The base station receives the updated mobile unit location information and updates it beam pattern towards the mobile unit.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Bahl to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 5**, and as **applied to claim 4 above**, Bahl, as modified by Velazquez, discloses sending survey packets to said station (Bahl: paragraph 26).

Consider **claim 6**, and as **applied to claim 4 above**, Bahl, as modified by Velazquez, discloses the claimed invention wherein said table includes angle of arrival information. (Velazquez: paragraph 60)

Consider **claim 7**, and as **applied to claim 4 above**, Bahl, as modified by Velazquez, discloses the claimed invention wherein said table includes angle of arrival information computed from synchronization information received in a signal from said station. (Velazquez: abstract; paragraphs 58-69)

Consider **claim 17**, and **as applied to claim 16 above**, Bahl, as modified by Velazquez, discloses means for sending survey packets to said station (Bah: paragraph 26).

Consider **claim 18**, and **as applied to claim 16 above**, Bahl, as modified by Velazquez, discloses the claimed invention except wherein said table includes angle of arrival information. (Velazquez: paragraph 60)

Consider **claim 19**, and **as applied to claim 16 above**, Bahl, as modified by Velazquez, discloses the claimed invention except wherein said table includes angle of arrival information computed from synchronization information received in a signal from said station. (Velazquez: abstract; paragraphs 58-69)

Claims 10-12, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Goransson et al (United States Patent Application Publication # 2004/0121810 A1)** in view of **Velazquez et al (US 2001/0003443 A1; hereinafter Velazquez)**.

Consider **claim 10**, Goransson et al disclose a method for adjusting beams comprising the step of forming a select beam to cover said station (paragraph 26), but fails to disclose decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station; and decoding a second part of a transmitted packet as received via said select beam.

In related art, Velazquez discloses decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station (abstract; paragraphs 58-69; The beamformer hardware takes as input the current latitude

and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal); and decoding a second part of a transmitted packet as received via said select beam. (abstract; paragraphs 58-69; a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive signals)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Goransson to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 12**, Goransson et al disclose a method for adjusting beams comprising the step of adjusting a basis beam to ensure coverage of said mobile station (paragraph 26), but fails to disclose decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station; adjusting a basis beam to ensure coverage of said mobile station based on said angle of arrival; and decoding a second part of a transmitted packet as received via said select beam.

In related art, Velazquez discloses decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station (abstract; paragraphs 58-69; The beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal); adjusting a basis beam to ensure coverage of said mobile station based on said angle of arrival (abstract; paragraphs 58-69; The complex weights are calculated to simply steer the antenna beam); and decoding a second

part of a transmitted packet as received via said select beam. (abstract; paragraphs 58-69; a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive signals)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Goransson to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 22**, Goransson et al disclose a system for adjusting beams comprising: means for forming a select beam to cover said station (paragraph 26), but fails to disclose means for decoding at an access point a first part of a transmitted packet to determine of said transmitted packet as transmitted from a mobile station; and means for forming a select beam to cover said mobile station based on said angle of arrival; and means decoding a second part of a transmitted packet as received via said select beam.

In related art, Velazquez discloses means for decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station (abstract; paragraphs 58-69; The beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal); and decoding a second part of a transmitted packet as received via said select beam. (abstract; paragraphs 58-69; a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive signals)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Goransson to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 24**, Goransson et al disclose a system for adjusting beams comprising means for adjusting a basis beam to ensure coverage of said station (paragraph 26), but fails to disclose means for decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station; means for adjusting a basis beam to ensure coverage of said mobile station based on said angle of arrival; and decoding a second part of a transmitted packet as received via said select beam.

In related art, Velazquez discloses means for decoding at an access point a first part of a transmitted packet to determine the angle of arrival of said transmitted packet as transmitted from a mobile station (abstract; paragraphs 58-69; The beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal); means for adjusting a basis beam to ensure coverage of said mobile station based on said angle of arrival (abstract; paragraphs 58-69; The complex weights are calculated to simply steer the antenna beam); and decoding a second part of a transmitted packet as received via said select beam. (abstract; paragraphs 58-69; a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive signals)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Goransson to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 11**, and **as applied to claim 10 above**, Goransson et al, as modified by Velazquez, disclose the claimed invention wherein updating an angle of arrival table in said access point with said determined angle of arrival information. (Velazquez: abstract; paragraphs 58-69)

Consider **claim 23**, and **as applied to claim 22 above**, Goransson et al, as modified by Velazquez, disclose the claimed invention except means for updating an angle of arrival table in an access point with said determined angle of arrival information. (Velazquez: abstract; paragraphs 58-69)

Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Park et al (United States Patent Application Publication #7,043,272 B2; hereinafter Park)** in view of **Velazquez et al (US 2001/0003443 A1; hereinafter Velazquez)**.

Consider **claim 25**, Park et al disclose an access point comprising:
an antenna array; (figure 1, 101; figure 7; col. 8, lines 45-63)

one or more processes that receive packets from said antenna, said packets generated by mobile stations, said one or more processors decoding a first portion of said packets (abstract; fig. 7; col. 6, line 24 - col. 7, line 7; col. 8, lines 45-63).

Park et al fails to specifically disclose determining the angle of arrival of said packets, and outputting antenna array weights to said antenna array to steer a select beam to cover said mobile stations.

In related art, Velazquez discloses determining the angle of arrival of said packets, and outputting antenna array weights to said antenna array to steer a select beam to cover said mobile stations. (paragraphs 58-69; The beamformer hardware takes as input the current latitude and longitude of each mobile unit, compares it with the known location of the base station to determine the angle of arrival (AOA) of each mobile unit's signal, and generates a set of complex antenna weights to apply to each antenna output for each mobile unit such that the combined signal represents a beam pattern steered in the direction of the desired mobile unit for both the transmit and receive signals. The complex antenna weights are calculated to simply steer the antenna beam.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Velazquez into the teachings of Park to form narrow antenna beams to and from desired users and away from undesired users to reduce co-channel interference.

Consider **claim 26**, and as applied to **claim 25 above**, Park et al, as modified by Velazquez, disclose the claimed invention wherein said processor further outputs antenna array

weights for adjusting a basis beam generated by said antenna array. (Park et al: col. 6, line 24 - col. 7, line 7; col. 8, lines 45-63)

Allowable Subject Matter

Claims 1-3, 8, 13-15, and 20 are allowed.

Consider **claim 1**, the best prior art of record found during the examination of the present application, **Park et al (US 7,043,272 B2)**, fails to specifically disclose, teach, or suggest an angle of arrival of said mobile station is determined from header information contained in said header, and wherein said forming step determines if said mobile station is covered by comparing said angle of arrival of said mobile station with angles covered by said basis beam.

Claims 2-3 are allowable because it is dependent upon independent claim 1.

Consider **claim 8**, the best prior art of record found during the examination of the present application, **Park et al (US 7,043,272 B2)**, fails to specifically disclose, teach, or suggest an angle of arrival of said mobile station is determined from header information contained in said header, and wherein said forming step determines if said mobile station is covered by comparing said angle of arrival of said mobile station with angles covered by said basis beam.

Consider **claim 13**, the best prior art of record found during the examination of the present application, **Park et al (US 7,043,272 B2)**, fails to specifically disclose, teach, or suggest an angle of arrival of said mobile station is determined from header information contained in said

header, and wherein said forming step determines if said mobile station is covered by comparing said angle of arrival of said mobile station with angles covered by said basis beam.

Claims 14-15 are allowable because it is dependent upon independent claim 13.

Consider **claim 20**, the best prior art of record found during the examination of the present application, **Park et al (US 7,043,272 B2)**, fails to specifically disclose, teach, or suggest an angle of arrival of said mobile station is determined from header information contained in said header, and wherein said forming step determines if said mobile station is covered by comparing said angle of arrival of said mobile station with angles covered by said basis beam.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any response to this Office Action should be **faxed to (571) 273-8300 or mailed to:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Bobbak Safaipoor whose telephone number is (571) 270-1092. The Examiner can normally be reached on Monday-Friday from 9:00am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Matthew Anderson can be reached on (571) 272-4177. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Art Unit: 2618

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

/Bobbak Safaipoor/
Examiner, Art Unit 2618

August 28, 2008

/Matthew D. Anderson/

Supervisory Patent Examiner, Art Unit 2618